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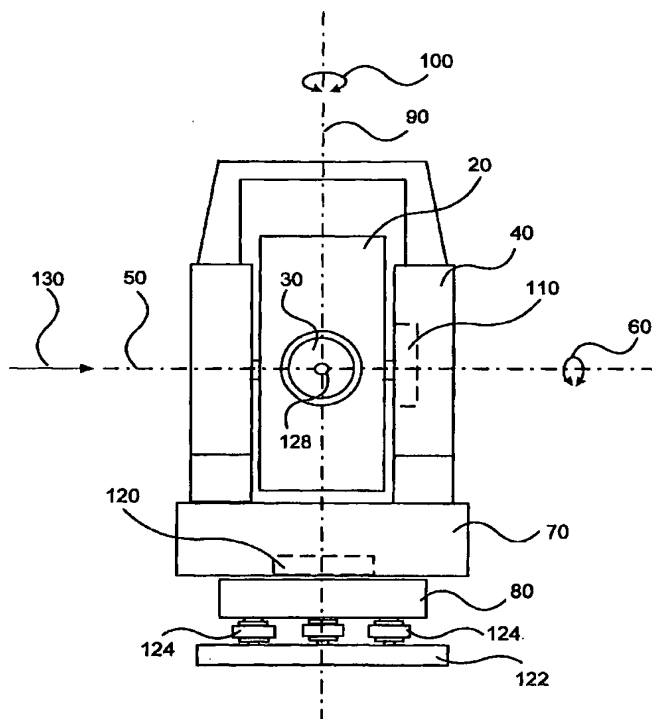
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- (54) Title:** A SURVEYING INSTRUMENT WITH COMPENSATION FOR MECHANICAL ERRORS



(57) Abstract: The invention relates to a method of operating a surveying instrument (10) placed in a orthogonal XYZ-system at (0,0,0) having a movable unit (20), said instrument defining a sight line (128) that is controllably rotatable around a first axis (50), essentially horizontal, and around a second axis (90), essentially vertical, wherein said second axis (90) may be inaccurately positioned so that it deviates from a true vertical axis, and said first axis (50) may deviate from being orthogonal to the second axis (90); the method comprising the steps of determining at least one of the following group of errors relating to the instrument and/or its location: a) a trunnion axis error T as a function of the deviation from 90 degrees between the first axis (50) and the second axis; b) a horizontal collimation error CH, being the deviation between the sight line (128) and the perpendicular angle as related to the first axis (50); and c) a total plumb error defined by components, PI and PII, being two separate angular values defining the tilt of the instrument as related to the plumb line through the same; and d) using these determined values in continuously controlling the alignment when aiming the instrument. The invention also relates to a surveying instrument for use with the method and an error compensation system for a surveying instrument.



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